# California High Speed Rail

Presentation on:

## Draft Bay Area to Central Valley High-Speed Train (HST) Program Environmental Impact Report/ Environmental Impact Statement (EIR/EIS)

FLYCALIFORNIA
Without ever leaving the ground.

California High Speed Rail Authority Board
(June 27, 2007)

# Decision Steps

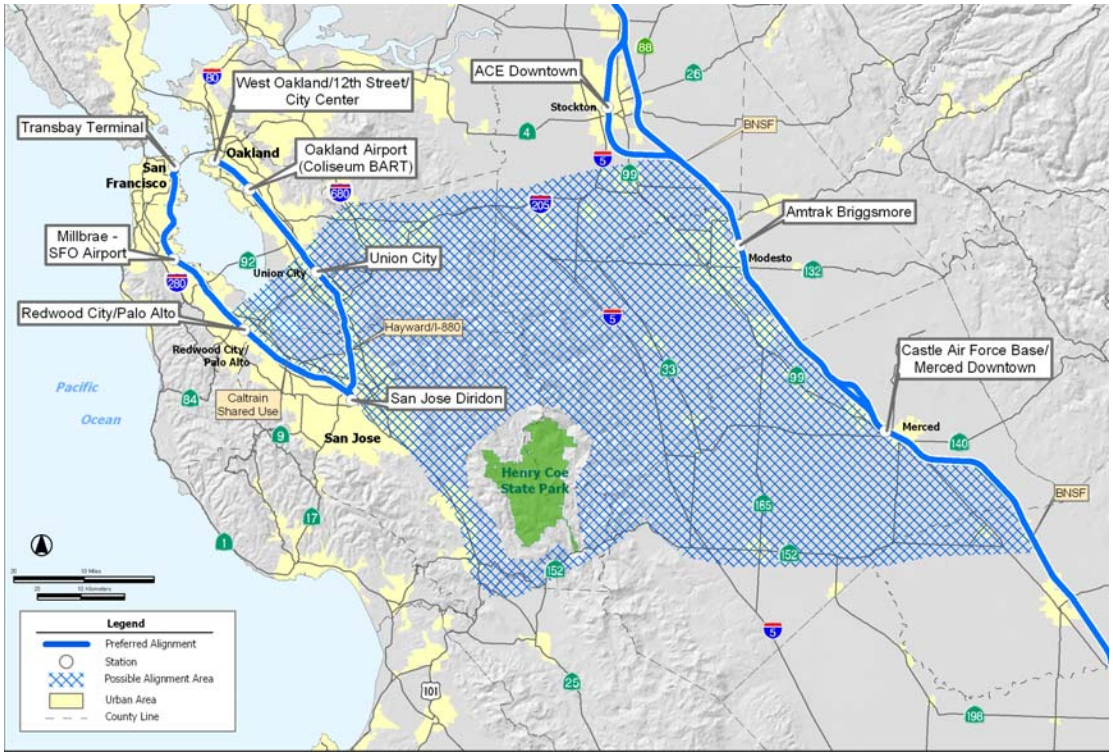
- Circulation of Draft Program EIR/EIS
- Public Hearing – Public & Agency Comments
- Evaluation of Network/Alignment Alternatives & Station Options
- Preferred Alternative Recommendation & Board Direction
- Preparation of Final Program EIR/EIS
- HSRA Board and FRA Decisions
- Project Level EIS/EIR / Preliminary Engineering for Bay Area to Central Valley

# Prior Actions

- Authority & Federal Railroad Administration (FRA):
  - Completed Statewide Program EIR/EIS (Nov. 2005)
  - Selected HST Alternative (Nov. 2005)
  - Selected HST Routes & Corridors (Nov. 2005)

# Bay Area to Central Valley

## Authority Directed Staff:




**"prepare separate program-level EIR to identify a preferred alignment within the broad corridor between & including the Altamont Pass & Pacheco Pass for the HST segment connecting the San Francisco Bay Area to the Central Valley."**

# Purpose of HST System

- **Provide Reliable High-speed Electrified Train System that:**
  - **Links Major Bay Area Cities to the Central Valley, Sacramento, & Southern California**
  - **Delivers Predictable & Consistent travel times**
  - **Provides Interfaces between HST System & Major Commercial Airports, Mass Transit & Highway Network to Relieve Capacity Constraints of Existing Transportation System**
- **In a Manner Sensitive to & Protective of Bay Area to Central Valley Region's & California's Unique Natural Resources.**

# Evaluation Criteria

| Objective | Criteria |
|---|---|
| Maximize ridership/revenue potential | Travel time<br>Population/employment catchment area<br>Ridership and revenue forecasts |
| Maximize connectivity and accessibility | Intermodal connections |
| Minimize operating and capital costs | Length<br>Operational issues<br>Construction issues<br>Capital cost<br>Right-of-way issues/cost |
| Maximize compatibility with existing and planned development | Land use compatibility and conflicts<br>Visual quality impacts<br>Transit oriented development potential |
| Minimize impacts on natural resources | Water resources impacts<br>Floodplain impacts<br>Wetland impacts<br>Threatened and endangered species impacts |

# Evaluation Criteria (continued)

| Objective | Criteria |
|---|---|
| Minimize impacts on social and economic resources | Environmental justice impacts (demographics)<br>Farmland impacts |
| Minimize impacts on cultural and parks/wildlife refuge resources | Cultural resources impacts<br>Parks and recreation impacts<br>Wildlife refuge impacts |
| Maximize avoidance of areas with geologic and soils constraints | Soils/slope constraints<br>Seismic constraints |
| Maximize avoidance of areas with potential hazardous materials | Hazardous materials/waste constraints |

# High Speed Trains

- State-of-the-art Electrically Powered Steel Wheel-on-Steel-Rail with Automatic Train Control
  - Extensively proven technology: Japan +40 years & Europe for +25 years
- Fully Grade-separated (no auto or pedestrian crossing on tracks) & Fenced
- Completely Double Track
  - Four tracks at intermediate stations for express services.


France—TGV


Germany—ICE


Japan—Shinkansen

# High Speed Trains

- Safest, Most Reliable Form of Transportation
- Speeds in Excess of 200 mph
- Carry up to an Estimated 117 Million Passengers Annually by 2030
- 124 – 139 Trains/Day in Each Direction


France—TGV


Germany—ICE


Japan—Shinkansen

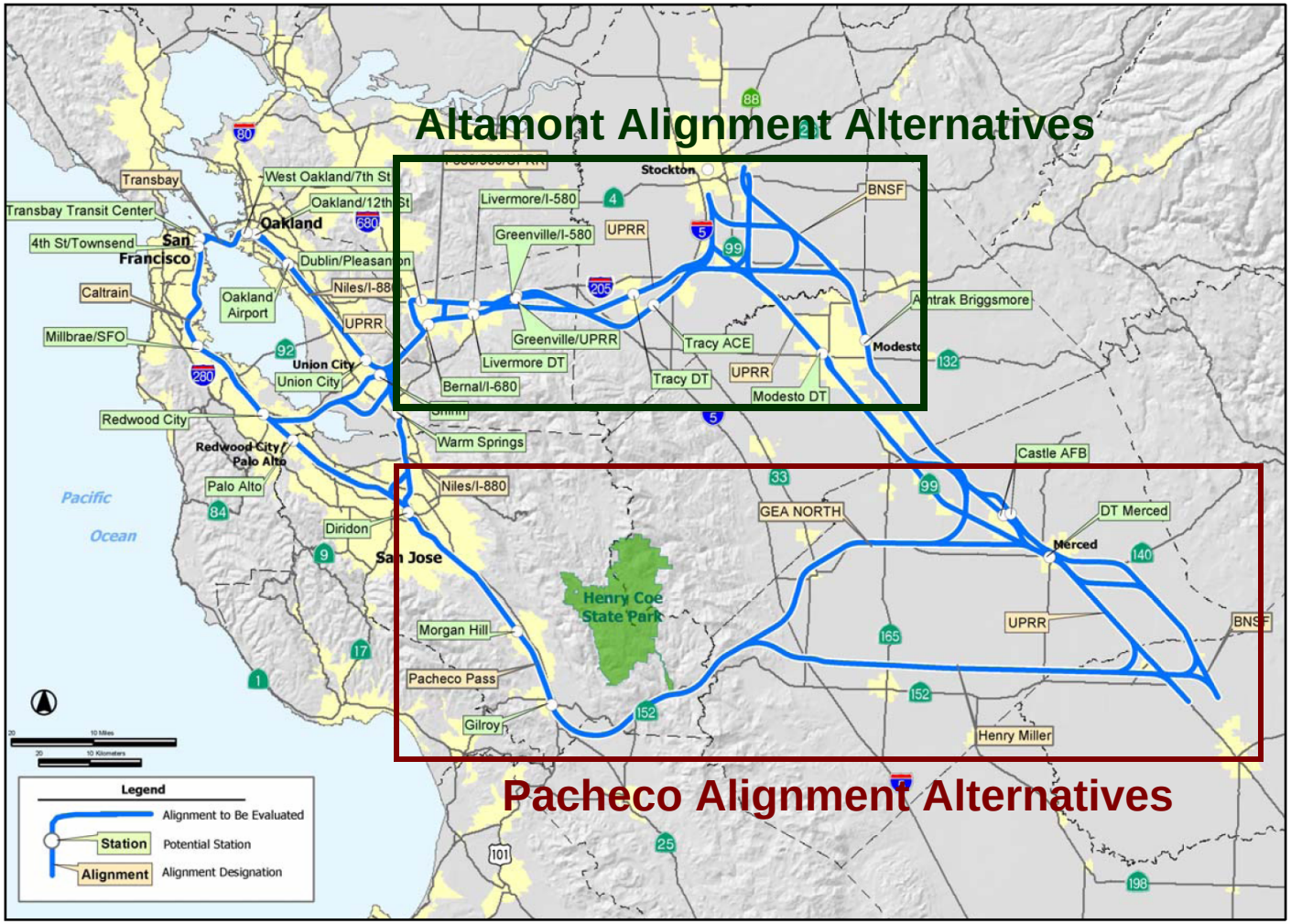
# Scoping

- 12 Agency & Public Scoping Meetings
  - In Conjunction with San Francisco Bay Area Regional Rail Plan Initiation Meetings (November/December 2005)
  - Over 500 people participated
    - Helped Identify Alternatives

# Alignments Evaluated

- Alignments Based on:
  - Review of Statewide Program EIS/EIR
  - Previous Studies
  - Scoping Comments
  - Agency Consultation
  - Coordination with Bay Area Regional Rail Plan
    - MTC, BART, Caltrain & Authority

# Alignment Alternatives

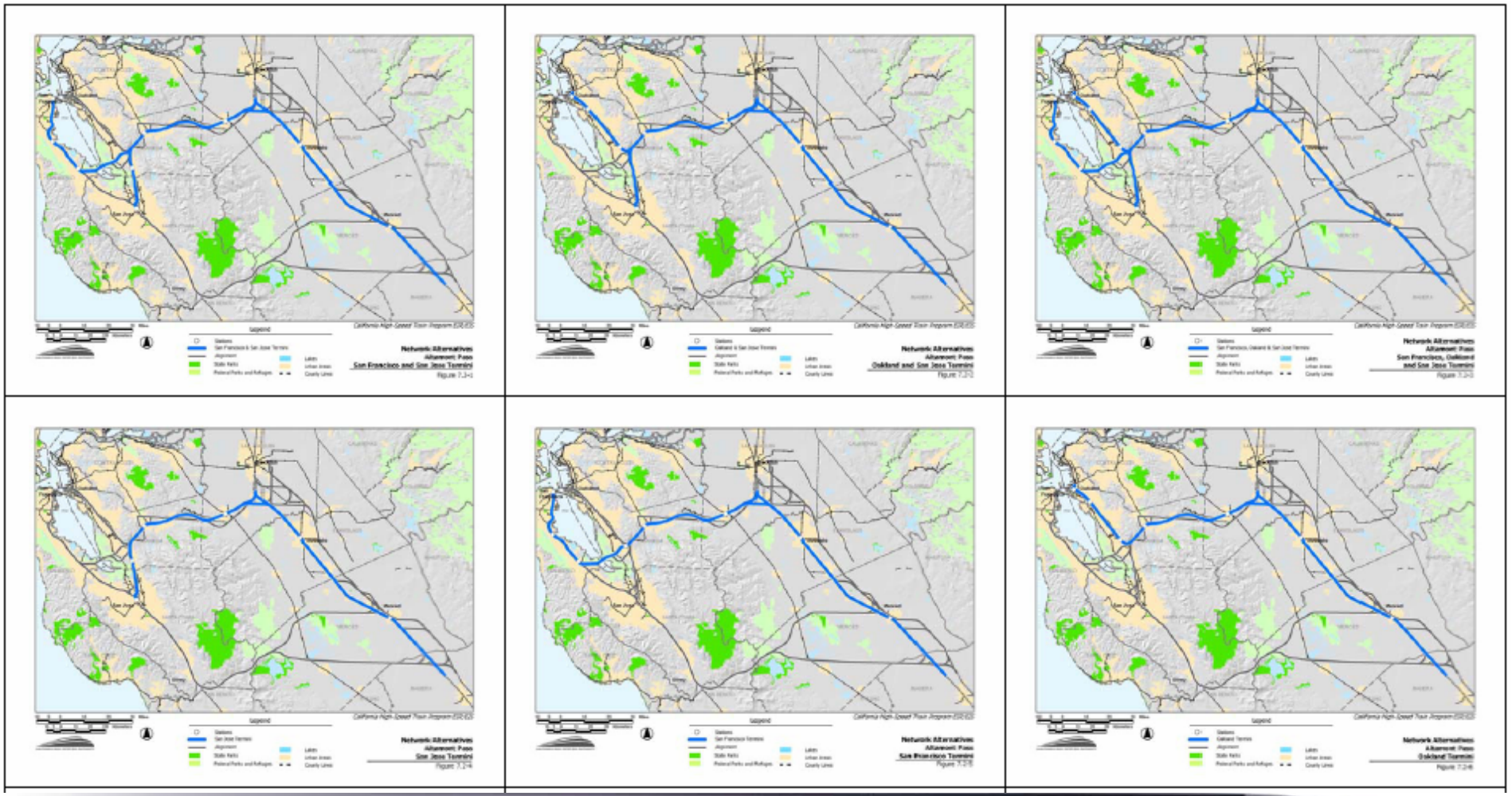


# 21 Representative Network Alternatives

- To Evaluate How Various Combinations of Alignment Alternatives Meet Purpose & Need & Perform as part of Statewide System
  - Network Length, Capital Costs, O&M Costs, Ridership/ Revenue, Travel Times, Environmental Impacts, etc.
- Variations Include:
  - Direct Service to 0 to 3 City Centers – San Jose, San Francisco, and/or Oakland
  - No Bay Crossing or New Dumbarton Bridge or New Transbay Tube

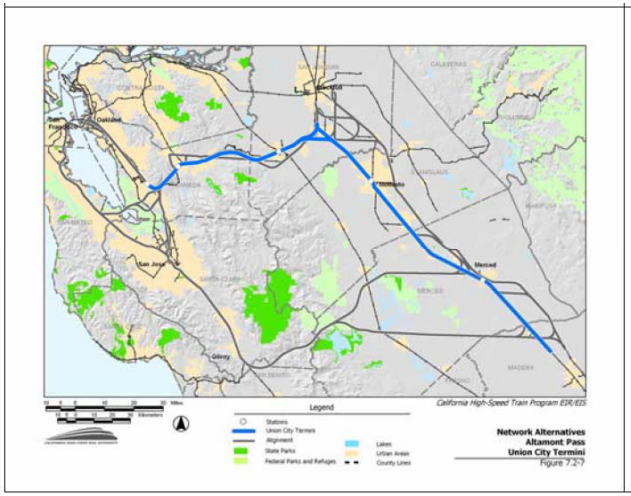
# Network Alternatives

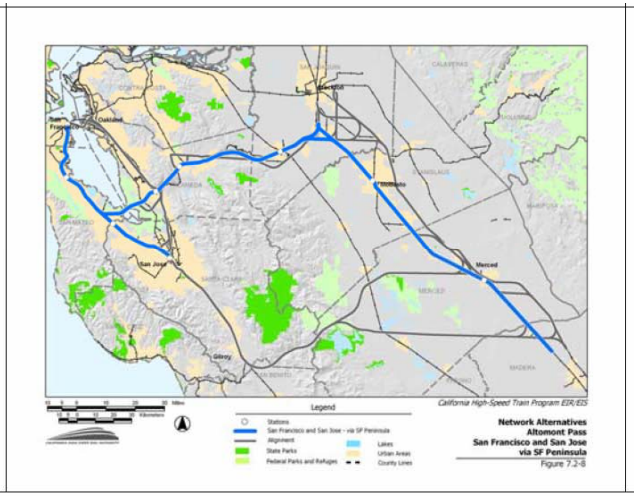
## Altamont Pass Network Alternatives

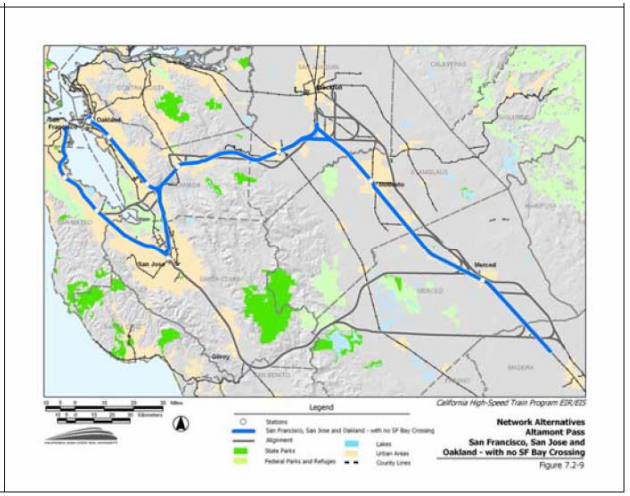


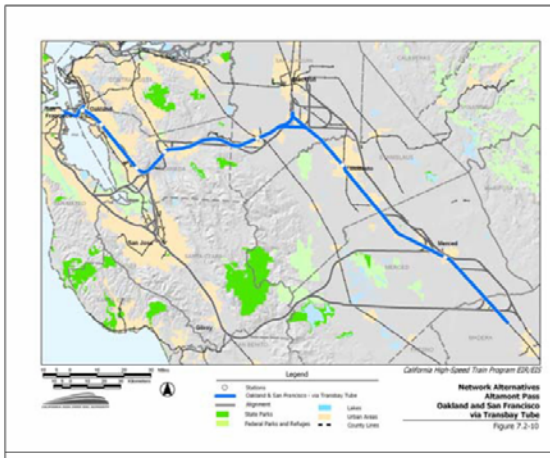
# Network Alternatives

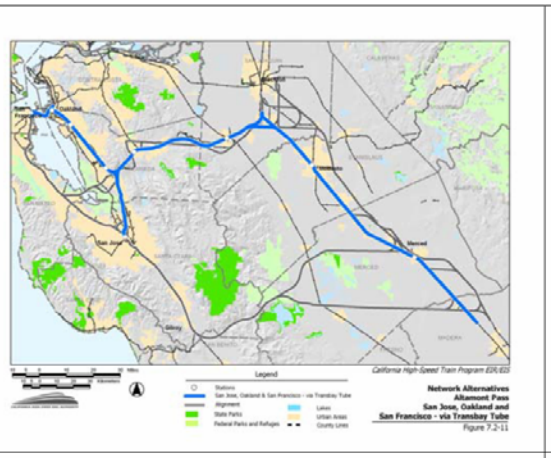
## Altamont Pass Network Alternatives (continued)



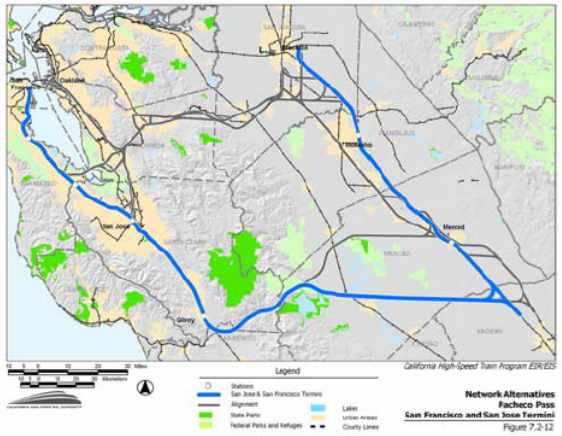



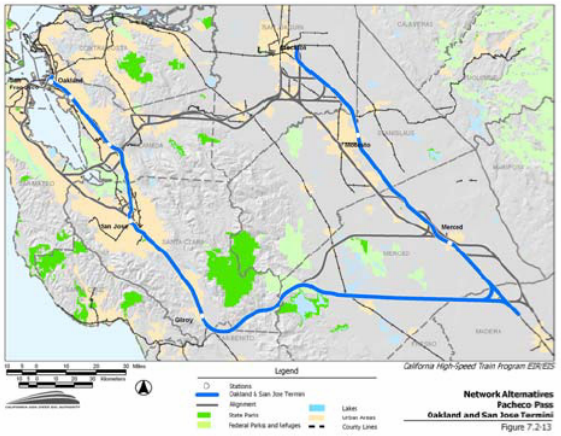



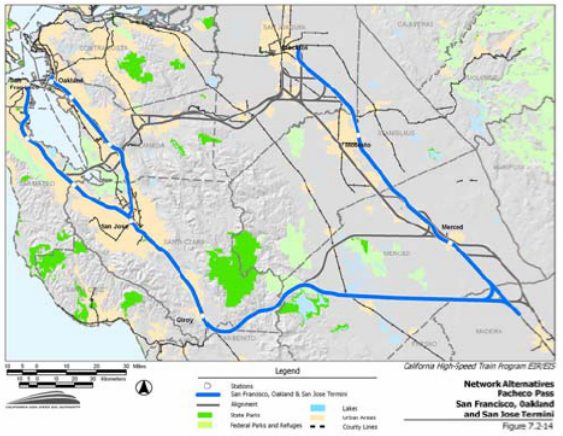



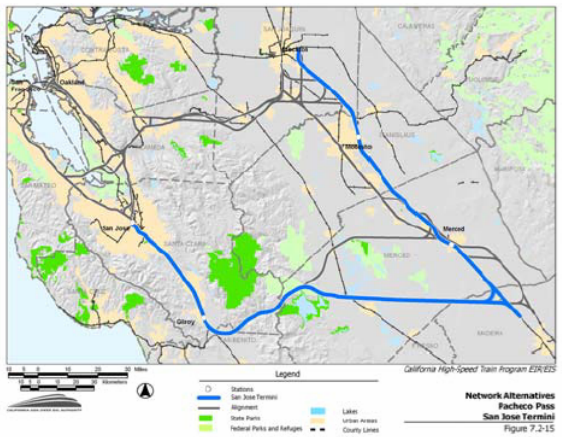
# Network Alternatives

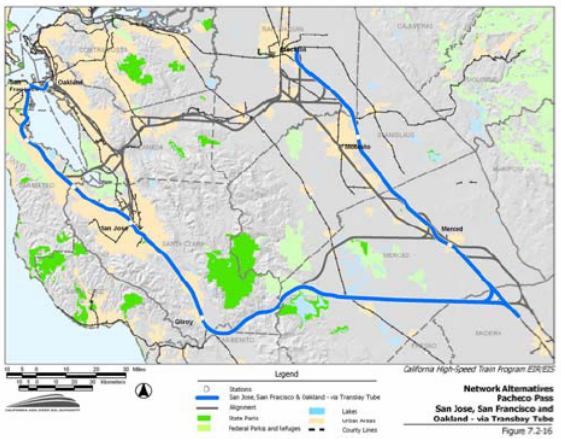
## Pacheco Pass Network Alternatives

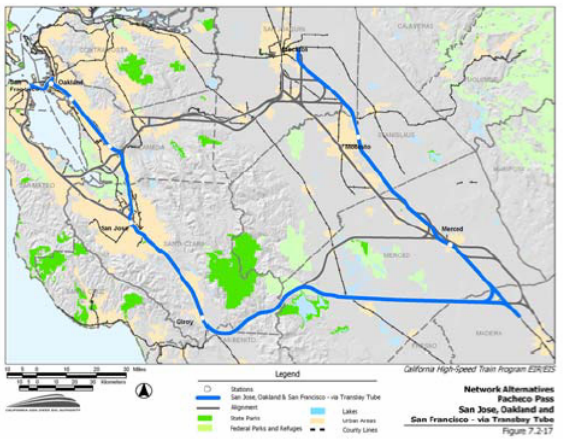


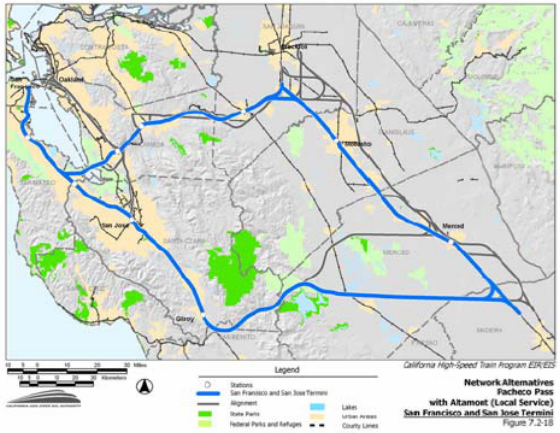



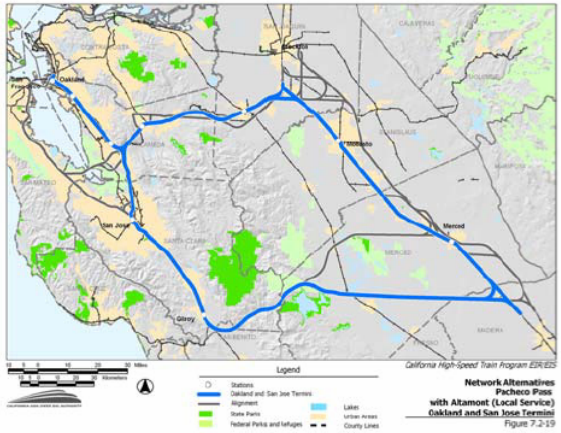



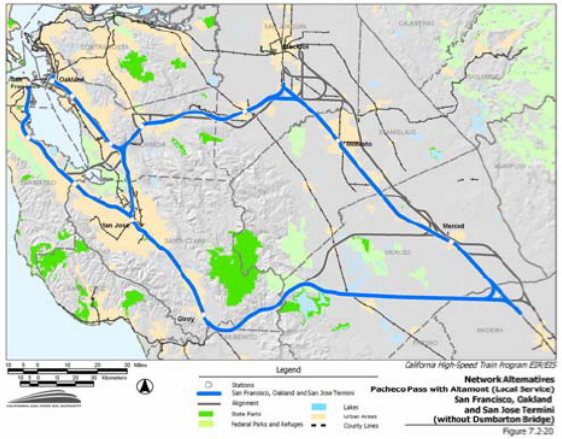



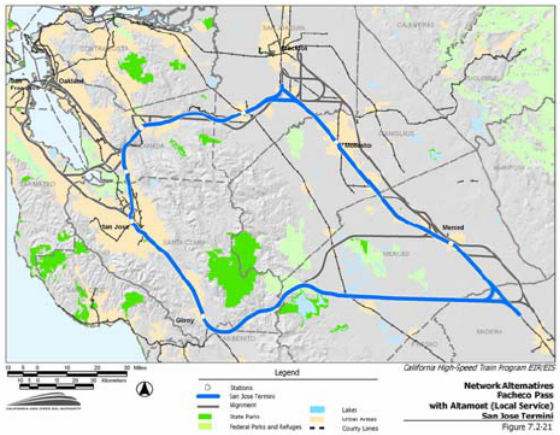
# Network Alternatives

## Combined Pacheco & Altamont Network Alternatives



# Capital Cost Examples

- Base Case Costs (to SF & San Jose)
  - Altamont - $ 12.7 Billion
  - Pacheco - $ 12.4 Billion
- To San Jose Only Costs
  - Altamont - $ 7.7 Billion
  - Pacheco - $ 8.0 Billion
- Highest Cost Per Mile are Network Alts with:
  - Transbay Tube➔ Cost = ~$3.8 - $4.0 Billion or
  - Dumbarton Bridge➔ Cost = ~$1.3 - $1.7 Billion

# Travel Times

| Express Train Travel Times* | Altamont (Hours. Min) | Pacheco (Hours. Min) |
|---|---|---|
| San Francisco - Los Angeles | 2.36 | 2.38 |
| Oakland - Los Angeles | 2.23 | 2.30 |
| San Jose - Los Angeles | 2.19 | 2.09 |
| San Francisco - Sacramento | 1.06 | 1.47 |
| Oakland - Sacramento | 0.53 | 1.38 |
| San Jose - Sacramento | 0.49 | 1.18 |

*Using Base Altamont & Pacheco Network Alternatives that assume:

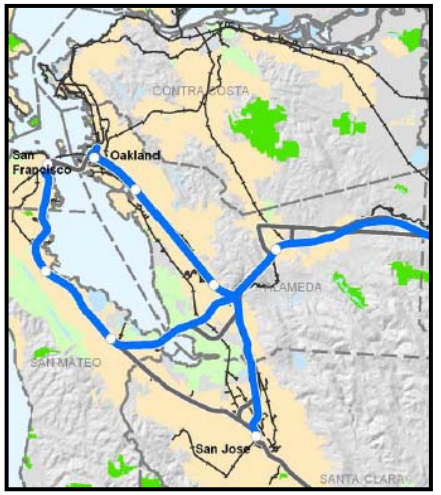
- Altamont Alts with Dumbarton Crossing
- Pacheco Alts with No Transbay Tube .

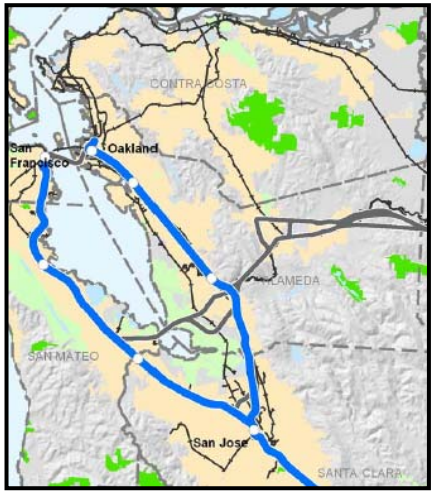
# Travel Conditions

- Direct service to more Bay Area City Centers will Result in Greater Benefits
  - Increased Connectivity to Other Transit Systems
  - Increased Convenience
  - Improved Travel Times
- Direct connection to SFO (region's hub airport) and/or Oakland International Airport Provides Increased Connectivity for Air Passengers

# HST Ridership

- Annual Riders – Base Forecasts - Low End (2030)
  - From 79.6 million - shortest Pacheco Pass Alt with San Jose terminus – to 96.2 million for Pacheco & Altamont (w/local service)
- Frequency of Service is Major Factor
  - For example ➔ # Riders for Altamont with service to San Francisco is greater than # Riders for Altamont with service to San Francisco & San Jose



# Revenues & O&M Costs

- Annual Revenue – Base Forecast – Low End (2030)
  - From $2.67 to $3.18 Billion
- Annual O&M Cost – Varies with Network Length & Service Frequency
  - Service Levels are Consistent Across All Network Alternatives
  - Lower O&M Costs for Altamont (~7% less) due to Shorter Sacramento to Bay Area Service

# Streams & Waters

- Network Alternatives with New Crossing of San Francisco Bay
  - 38.8 to 40.3 Acres of Direct Waterbody Impacts, including SF Bay, and
  - 44.4 to 56.1 Acres of Direct Wetland Impacts
- Network Alternatives with No Bay Crossing
  - Wetland Impacts Range From 10.7 to 17.5 Acres for Altamont or Pacheco
  - Up to 25.4 Acres for Combined Altamont + Pacheco

# Farmlands

- Pacheco Alts – Higher Farmland Impacts
  - 368.1 to 383.2 more acres than Altamont Alts
    - Adjusted for 240 additional acres for BNSF-UPRR in Central Valley

# Vehicle Miles Traveled

- HST Reduces Vehicle Miles Traveled (VMT) by 7% to 12% in Bay Area & Central Valley Counties
  - 5% VMT Reductions Statewide
- Highest Ridership ➔ Greater VMT Reductions

# Energy Savings & Air Emissions Reductions

- HST Saves 22 Million Barrels of Oil Annually
  - Uses 1/3 the Energy / Mile of Air travel
  - Uses 1/5 the Energy / Mile of Auto travel
- HST Reduces $CO_2$ (Greenhouse Gases) by 17.6 Billion Pounds Annually (2030)
  - Emits 1/10 of Other Pollutants per mile vs. Airplane & Auto
- Highest Ridership ➔ Highest Energy Savings ➔ Highest Air Emissions Reductions

# Questions & Answers

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